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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/003,044	12/06/2001	Hajime Matsumoto	43247	4952
1609	7590	08/18/2005	EXAMINER	
ROYLANCE, ABRAMS, BERDO & GOODMAN, L.L.P. 1300 19TH STREET, N.W. SUITE 600 WASHINGTON,, DC 20036			PUTTLITZ, KARL J	
			ART UNIT	PAPER NUMBER
			1621	

DATE MAILED: 08/18/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/003,044

Applicant(s)

MATSUMOTO ET AL.

Examiner

Karl J. Puttlitz

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1621

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 08 June 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-3, 5, 6 and 8-13 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☐ Claim(s) \_\_\_\_\_ is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
  - 2) ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)             | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948)     | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |

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**DETAILED ACTION*****Continued Examination Under 37 CFR 1.114***

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 2/2/2005 has been entered.

The outstanding rejection under section 103 over Shingai is withdrawn since this reference fails to teach or suggest the step of recovering (meth)acrylic acid and recycling the same to a reaction apparatus for use as a raw material in the production of hydroxyalkyl (meth)acrylic acid.

The following new grounds of rejection are now entered under section 103:

***Prior Art rejections***

The claims are drawn to, inter alia, a production process for a hydroxyalkyl (meth)acrylate, which comprises the step of carrying out a reaction between (meth)acrylic acid and an alkylene oxide to produce the hydroxyalkyl (meth)acrylate in a reaction apparatus, with the production process further comprising the steps of:

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(a) producing a resultant reaction liquid in the reaction apparatus where the resultant reaction liquid contains crude hydroxyalkyl (meth)acrylate, unreacted (meth)acrylic acid and unreacted alkylene oxide,

(b) introducing the resultant reaction liquid from said reaction apparatus into a distillation apparatus and distilling the reaction liquid under an operational pressure of 1 to 40 hPa to remove obtain a distillate containing unreacted (meth)acrylic acid;

(c) recovering the distillate containing the unreacted (meth)acrylic acid by the distillation of the resultant reaction liquid; and thereafter

(d) recycling and introducing the distillate containing the unreacted (meth)acrylic acid recovered from the distillation apparatus into the reaction apparatus as a raw material for the reaction wherein the concentration of the (meth)acrylic acid in the reaction liquid is in the range of 0.1 to 20 weight %.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S.

Patent No. 3,709,928 to Murayama et al. (Murayama).

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Murayama teaches the production of hydroxyalkylacrylates from the reaction alkylene oxides and acrylic or methacrylic acid. See column 1, lines 30-42.

The patent teaches a distillation of the reaction mixture to produce a distalate containing methacrylic acid (MAA in Table 1):

TABLE 1							
	Additive at the time of distillation (wt. %)	Reaction yield (mol percent)	Distillation yield (wt. percent)	Composition of product			Material adhered to heating portion of distillation still
				HMA wt. percent	MAA wt. percent	EDMA wt. percent	
Example 2	Triethyleneglycol	97.8	94.4	68	4.4	0.8	2 Not observed.
Comparative example 1	Diethylphthalate	97.0	96.6	68	5.4	0.8	2 Observed.
Comparative example 2	None	97.8	94.3	68	4.4	0.8	2 Do.

The difference between the claimed process and that disclosed by Murayama is that Murayama fails to explicitly teach the recycling of methacrylic acid. However, those of ordinary skill would be motivated to recycle raw materials isolated from a reaction product in order to increase reaction efficiency, and therefore, recycling methacrylic acid as a raw material is prima facie obvious.

Claims 1, 2, 3, 5, 6, and 8-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Murayama in view of U.S. Patent No. 6,534,625 to Matsumoto et al. (Matsumoto)

The rejected claims cover those embodiments comprising the addition of polymerization inhibitors and those embodiments comprising the steps of separating the unreacted alkylene oxide from the reaction liquid in the first place, and thereafter recovering the unreacted (meth)acrylic acid by the distillation.

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Murayama fails to explicitly teach the embodiments listed above. It is for this proposition that the examiner joins Matsumoto. Specifically, Matsumoto teaches a process for producing a hydroxyalkyl (meth)acrylate which comprises the step of carrying out a reaction between (meth)acrylic acid and an alkylene oxide, wherein the process provides recovering and recycling the unreacted residue of the alkylene oxide.

The patent teaches polymerization inhibitors at the description bridging columns 2 and 3

The patent teaches stripping the unreacted residue of the alkylene oxide from the reaction liquid to separate therefrom the unreacted residue of the alkylene oxide, and then using water as an absorbing solvent to cause it to absorb the separated unreacted residue of the alkylene oxide. See column 1 lines 53-67.

Importantly, the patent teaches that when the unreacted residue of the alkylene oxide is recovered by the stripping and absorption, the (meth)acrylic acid or the hydroxyalkyl (meth)acrylate mingles into the absorbing liquid as well as the absorption apparatus due to the vapor pressure or an entrainment caused by the stripping. See column 4, last paragraph.

Also, a part of the absorbing liquid resultant from the absorption of the unreacted residue of the alkylene oxide may be subjected to addition of (meth)acrylic acid or alkylene oxide fitly if necessary, and then recycled as a raw material for producing the hydroxyalkyl (meth)acrylate. See column 6, lines 13-19.

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Also , with regard to claim 3, the above reaction liquid is led to the step to remove such as these unreacted residues of raw materials from the reaction liquid, and then purified by such as distillation as the subsequent final step, with the result that the aimed hydroxyalkyl (meth)acrylate is obtained. See column 2, lines 26-35.

Therefore, those of ordinary skill would have been motivated to modify Murayama to include the steps of the addition of polymerization inhibitors and those embodiments comprising the steps of separating the unreacted alkylene oxide from the reaction liquid in the first place; and thereafter recovering the unreacted (meth)acrylic acid by the distillation, since Matsumoto teaches that these purification steps can be preformed to recover unreacted residues of raw materials. Therefore, the rejected claims are prima facie obvious in view of Murayama and Matsumoto since these references teach the elements of the claims with a reasonable expectation of success.

Applicant cannot rely upon the foreign priority papers to overcome this rejection because a translation of said papers has not been made of record in accordance with 37 CFR 1.55. See MPEP § 201.15.

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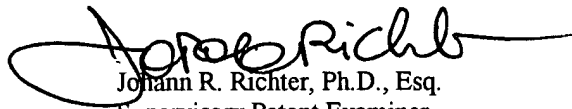
### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Karl J. Puttlitz whose telephone number is (571) 272-0645. The examiner can normally be reached on Monday to Friday from 9 a.m. to 5 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Johann Richter, can be reached at telephone number (571) 272-0646. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Karl J. Puttlitz  
*Assistant Examiner*

  
Johann R. Richter, Ph.D., Esq.  
Supervisory Patent Examiner  
Biotechnology and Organic Chemistry  
Art Unit 1621  
(571) 272-0646